



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,120	11/28/2001	Kwong-Yu Chan	609920600024	1508
24325 7590 01/08/2007 STEPHEN D. SCANLON JONES DAY 901 LAKESIDE AVENUE CLEVELAND, OH 44114			EXAMINER WONG, EDNA	
			ART UNIT 1753	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/08/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.		Applicant(s)	
	09/996,120		CHAN ET AL.	
	Examiner		Art Unit	
	Edna Wong		1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2006 and 22 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,7-23,26-31 and 33-52 is/are pending in the application.
- 4a) Of the above claim(s) 4,14-23,26-31 and 33-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-13 and 49-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This is in response to the Amendment dated September 21, 2006 and November 22, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Arguments

Election/Restrictions

Applicant's election of Group I, claims **1-2, 7-13 and 49-52**, in the reply filed on November 22, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Accordingly, claims **4, 14-23, 26-31 and 33-48** are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

Claims **12, 26-28 and 38** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 12, 26-28 and 38 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 102

I. Claims **1-2, 9 and 11-12** have been rejected under 35 U.S.C. 102(b) as being anticipated by **Katsoulis et al.** (US Patent No. 3,668,014).

The rejection of claims 1-2, 9 and 11-12 under 35 U.S.C. 102(b) as being anticipated by Katsoulis et al. has been withdrawn in view of Applicants' amendment.

II. Claims **4, 14, 19-20 and 23** have been rejected under 35 U.S.C. 102(b) as being anticipated by **Katsoulis et al.** (US Patent No. 3,668,014).

The rejection of claims 4, 14, 19-20 and 23 under 35 U.S.C. 102(b) as being anticipated by Katsoulis et al. has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims **7-8, 10 and 13** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Katsoulis et al.** (US Patent No. 3,668,014) as applied to claims 1-2, 9 and 11-12 above, and further in view of **Nonaka et al.** (US Patent No. 5,536,379), **Richter et al.** (US Patent No. 4,126,934) and **Kanbara et al.** (US Patent No. 5,538,811).

The rejection of claims 7-8, 10 and 13 under 35 U.S.C. 103(a) as being unpatentable over Katsoulis et al. as applied to claims 1-2, 9 and 11-12 above, and further in view of Nonaka et al., Richter et al. and Kanbara et al. has been withdrawn in view of Applicants' amendment.

II. Claims **15-18, 21-22 and 26-28** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Katsoulis et al.** (US Patent No. 3,668,014) as applied to claims 4, 14, 19-20 and 23 above, and further in view of **Nonaka et al.** (US Patent No. 5,536,379), **Richter et al.** (US Patent No. 4,126,934) and **Kanbara et al.** (US Patent No. 5,538,811).

The rejection of claims 15-18, 21-22 and 26-28 under 35 U.S.C. 103(a) as being unpatentable over Katsoulis et al. as applied to claims 4, 14, 19-20 and 23 above, and further in view of Nonaka et al., Richter et al. and Kanbara et al. has been withdrawn in view of Applicants' amendment.

III. Claims **29-30 and 33-39** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Katsoulis et al.** (US Patent No. 3,668,014) in combination with **Nonaka et al.** (US Patent No. 5,536,379), **Richter et al.** (US Patent No. 4,126,934) and **Kanbara et al.** (US Patent No. 5,538,811).

The rejection of claims 29-30 and 33-39 under 35 U.S.C. 103(a) as being unpatentable over Katsoulis et al. in combination with Nonaka et al., Richter et al. and Kanbara et al. has been withdrawn in view of Applicants' amendment.

IV. Claims **31 and 40-48** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Katsoulis et al.** (US Patent No. 3,668,014) in combination with **Nonaka et al.** (US Patent No. 5,536,379), **Richter et al.** (US Patent No. 4,126,934)

and Kanbara et al. (US Patent No. 5,538,811).

The rejection of claims 31 and 40-48 under 35 U.S.C. 103(a) as being unpatentable over Katsoulis et al. in combination with Nonaka et al., Richter et al and Kanbara et al. has been withdrawn in view of Applicants' amendment.

Response to Amendment

Claim Rejections - 35 USC § 112

Claims 1-2, 7-13 and 49-52 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for electrochemical oxidation, does not reasonably provide enablement for chemical oxidation. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Claim 1

line 1, recites "catalyze oxidation". The "catalyze oxidation" recited is open to chemical oxidation. However, Applicants' specification discloses that "the invention provides the composition of a catalyst that allows direct electrochemical oxidation of organic molecules" (page 2, lines 19-20). Thus, the claims are not commensurate in scope with the specification.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1-2, 7-8, 11, 49 and 51-52** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Richter et al.** (US Patent No. 4,126,934).

Richter teaches a method for catalytically oxidizing organic molecules comprising:

passing a solution containing organic molecules (= a phosphate buffer solution with 0.1 m glucose) over a catalyst (= an alloy) to catalyze the oxidation of the organic molecules, said catalyst comprising a mixture of platinum and cobalt (= an alloy with a composition corresponding to an atom ratio Pt:Co of 1:4) [col. 7, Example 4].

The catalyst **11** is supported on an electrode **12** (col. 6, lines 3-6 and lines 49-53; and Fig. 1).

The platinum is present in an amount within the range of about 52 to about 99 weight percent of the catalyst (= the inactive component is not dissolved out completely and the active catalytic layer may still contain small quantities of the inactive component

besides the active component) [col. 4, lines 13-18; col. 7, Example 4: "chemically activated"].

The cobalt is present in an amount within the range of about 48 to about 1 weight percent of the catalyst (= the inactive component is not dissolved out completely and the active catalytic layer may still contain small quantities of the inactive component besides the active component) [col. 4, lines 13-18; col. 7, Example 4: "chemically activated"].

The cobalt is present in an oxidation state of 0, 2, 8/3 or 3 (= cobalt) [col. 7, Example 4].

The platinum and the cobalt are mutually discrete (= in order to obtain a *fine-grain* alloy, which is easier to roll, the melt is chilled) [col. 6, lines 21-22].

The organic molecules are glucose molecules (col. 7, Example 4).

The oxidation of the organic molecules uses the organic molecules as fuel for a fuel cell (= a biofuel cell) [col. 1, lines 64-66].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims 9, 12-13 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter et al. (US Patent No. 4,126,934) as applied to claims 1-2, 7-

8, 11, 49 and 51-52 above, and further in view of **Katsoulis et al.** (US Patent No. 3,668,014).

Richter is as applied above and incorporated herein.

The method of Richter differs from the instant invention because Richter does not disclose the following:

a. Wherein said catalyst comprises metal oxides of said cobalt, as recited in claim 9.

Richter teaches platinum and cobalt (col. 7, Example 4).

Katsoulis teaches that the electrocatalyst can be of any of the various materials, including pure elements, alloys, mixtures and oxides which will enhance an electrochemical reaction (col. 3, lines 1-15).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst described by Richter with wherein said catalyst comprises metal oxides of said cobalt because an electrocatalyst of any of the various materials, including pure elements, alloys, mixtures and oxides would have enhanced an electrochemical reaction as taught by Katsoulis (col. 3, lines 1-15).

b. Wherein said catalyst further comprises a mixture of carbon and polytetrafluoroethylene, as recited in claim 13.

c. Wherein the platinum and the cobalt are in the form of platinum particles and cobalt particles, as recited in claim 50.

Richter teaches that a Pt:Co foil was prepared (col. 7, Example 4).

Katsoulis teaches that a catalytic mass, particularly combined with an electrically-conducting element, and/or a continuous hydrophobic polymer membrane is suitable for use as an electrode in an electrochemical cell, e.g., as a fuel or oxidant electrode in a fuel cell or as the cathode in a metal-air battery, wherein it provides high current densities at relatively constant voltages over a long period of time (col. 1, lines 12-22). The catalytic mass includes cobalt-platinum alloys (col. 3, lines 1-15). The continuous hydrophobic polymer membrane includes polytetrafluoroethylene (PTFE) [col. 2, lines 46-72).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the catalyst described by Richter with wherein said catalyst further comprises a mixture of carbon and polytetrafluoroethylene; and wherein the platinum and the cobalt are in the form of platinum particles and cobalt particles because a catalytic mass, particularly combined with an electrically-conducting element, and/or a continuous hydrophobic polymer membrane would have been suitable for use as an electrode in an electrochemical cell, e.g., as a fuel or oxidant electrode in a fuel cell wherein it would have provided high current densities at relatively constant voltages over a long period of time as taught by Katsoulis (col. 1, lines 12-22).

Furthermore, substituting the foil electrode disclosed by Richter with the matrix electrode disclosed by Katsoulis would have been functionally equivalent as the fuel or oxidant electrode in a fuel cell.

II. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Richter et al.** (US Patent No. 4,126,934) as applied to claims 1-2, 7-8, 11, 49 and 51-52 above, and further in view of **Katsoulis et al.** (US Patent No. 3,668,014) as applied to claims 9, 12-13 and 50 above, and further in view of **Ruetschi** (US Patent No. 3,160,526).

Richter and Katsoulis et al. are as applied above and incorporated herein.

The method of Richter differs from the instant invention because Richter does not disclose wherein said metal oxides are the products of reactive electrodeposition, as recited in claim 10.

Ruetschi teaches that it is known in the art that cobalt metal can be oxidized anodically in alkaline electrolyte to cobalt oxides (col. 1, lines 20-21).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the metal oxides described by Katsoulis with wherein said metal oxides are the products of reactive electrodeposition because it is known in the art that cobalt metal can be oxidized anodically in alkaline electrolyte to cobalt oxides as taught by Ruetschi (col. 1, lines 20-21).

Allowable Subject Matter

The following is a statement of reasons for the indication of allowable subject matter:

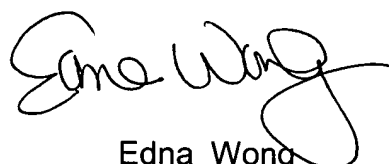
Claim 12 defines over the prior art of record because the prior art does not teach or suggest wherein said catalyst further comprises tin. The prior art does not contain

any language that teaches or suggests the above. *Richter et al.* do not teach wherein said catalyst further comprises tin. Therefore, a person skilled in the art would not have been motivated to adopt the above conditions, and a prima facie case of obviousness cannot be established.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Edna Wong". The signature is fluid and cursive, with the first name "Edna" and last name "Wong" clearly distinguishable.

Edna Wong
Primary Examiner
Art Unit 1753

EW
December 31, 2006